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ABSTRACT

This study was designed to test the effects of positive teacher expectancy instructions, positive student expectancy instructions, and positive performance feedback on the academic performance of second, third, and fourth grade students. 13 teachers (5 fourth grade, 4 third grade, and 4 second grade) from a rural Texas elementary school nominated approximately half of the students (163 students in all) from each of their classes, who were not considered to be "good" students, to participate in a special "motivation program." In addition to "good" students, students in the school's special education program were also excluded from the study. The students were assigned at random to groups in a 2 x 2 x 2 randomized factorial design. The factors were presence vs. absence of positive teacher expectancy instructions concerning students' academic potential; positive student expectancy instructions concerning each student's academic potential; and positive feedback concerning each student's academic performance. Pre- and post-treatment measures of academic performance were administered. Treatments were carried out in seven half-hour sessions in which subjects watched neutral films. Analysis of variance revealed teacher effects which suggest that teachers differentially changed their subjective ratings of student academic potential, differentially change the grades given to their students, and differentially affected their students' post-treatment test scores all independently of any of the controlled variables in this study. (Author/JM)

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Abstract

Thirteen second, third, and fourth grade teachers nominated 163 of their lower achieving students for a "motivation program." The students were assigned at random to groups in a 2 X 2 X 2 randomized factorial design. The factors were presence vs. absence of: positive teacher expectancy instructions concerning students' academic potential; positive student expectancy instructions concerning each student's academic potential; and positive feedback concerning each student's academic performance. Pre- and post-treatment measures of academic performance were administered. Treatments were carried out in 7 half-hour sessions in which Ss watched neutral films. Analysis of variance demonstrated significant feedback and feedback X teacher expectancy instruction interaction effects. The results were not supportive of a teacher expectancy or a student expectancy effect on academic performance.

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TEACHER EXPECTANCY, STUDENT EXPECTANCY, AND PERFORMANCE FEEDBACK EFFECTS ON ACADEMIC PERFORMANCE[1]

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Teacher expectancy of student performance has been explored recently as a variable in academic performance. Rosenthal and Jacobson (1968) reported the effects of randomly manipulated teacher expectancies of student performance on actual student performance and found that some of their high teacher expectancy students improved significantly more than did their control group students on a number of academic variables. Rosenthal and Jacobson speculated that positive teacher expectancy changes the quality of student-teacher interaction, such that the student is helped to learn by positively changing his self-concept, by increasing his achievement expectancies, by increasing his motivation, and by improving his academic skills. Questions concerning the interpretation of Rosenthal and Jacobson's finding (Snow, 1969; Claiborne, 1969; Thorndike, 1968) and the manner in which teacher expectancies may influence student academic performance prompted two quasireplications of their study. Claiborne (1969) found no significant teacher expectancy effects upon student IQ nor upon rated student-teacher interaction with first graders. Meichenbaum, Bower, and Ross (1969) did find teacher expectancy effects within a two week period for adolescent girls enrolled in

a special training unit for institutionalized delinquents. High expectancy students performed significantly better on objective academic tests than did students who were not in the expectancy group, although there was no expectancy effect for subjectively graded essays and teacher rated classroom performance. In addition, Meichenbaum, et al. found that teachers tended to either increase positive interactions or to decrease negative interactions with the expectancy subjects.

Brophy and Good (1970), Rothbart, Dalfen, and Barrett (1971), and Rubovitz and Maehr (1971) evaluated teacher expectancy effects on student-teacher interaction without any academic outcome measures. In general, these studies have lent support to the hypothesis that positive teacher expectancy changes student-teacher interaction in a positive, constructive manner. If positive teacher expectancy does change the quality of the student-teacher interaction so as to affect the student's academic performance and perhaps the student's own expectation about his performance as Rosenthal and Jacobson (1968) suggest, then it may be that positively changing student expectancy concerning academic performance more directly may also affect actual academic performance.

There have been few studies of the effects of student expectancy on student performance. Crockenberg (1970) found that subjects who viewed a film of a model succeed, persisted longer at an arithmetic task than did subjects who viewed a model fail, while both experimental groups performed better than a no film control group. Subject rated expectancy of success was not significantly

correlated with persistence at the task. However, high persisters gave significantly more moderately high expectancy estimates while low persisters gave significantly more very high and very low expectancy estimates. Means and Means (1971), found that university students with high grade point averages performed significantly better on a course test when given negative aptitude information than when given positive information, while low grade point average students performed better when given positive aptitude information. The Means and Means (1971) and Crockenberg (1970) studies suggest that moderately high performance expectancy may facilitate actual performance for subjects who are relatively poor performers to begin with; while in subjects of college age who are good academic performers, low expectancy information may facilitate good academic performance.

Another factor which may affect academic performance is performance feedback. Locke, in his 1968 review article on the effects of "knowledge of results" on performance, specified two functions of performance feedback: (a) a cueing function in which feedback helps a subject learn more efficient ways of performing, and (b) a motivational function which encourages the subject to try harder. From a review of studies in which the cueing function of feedback was eliminated, Locke suggested that the motivational effect of feedback occurs only when the subject is induced to set "specific, hard goals" for himself to perform and that there is a positive monotonic relationship between goal setting and performance. However, Locke cited no studies involving academic performance with school age children.

There are two published studies which bear more directly on performance feedback and actual performance in young children. Montanelli and Hill (1969) arbitrarily either criticized, praised, or did not react to ten-year-old subjects who were engaged in a simple marble dropping task. They found that criticism was associated with the best performance, praise was next, and no reaction was associated with the poorest performance. Coulter and Palmer (1971) arbitrarily gave fourth, fifth, and sixth graders positive comments, negative comments, or no comments concerning their reading of some paragraphs. It was found that the two groups which received comments on their readings performed significantly better than did the group that did not receive any comments. The negative comment group tended to perform better than the positive comment group, but not significantly so.

The present study was designed to test the effects of positive teacher expectancy instructions, positive student expectancy instructions, and positive performance feedback on the academic performance of second, third, and fourth grade students. The major hypotheses were: (a) positive teacher expectancy instructions, (b) positive student expectancy instructions, and (c) positive feedback concerning academic performance will contribute to improved academic performance for poor academic achievers.

Method

Subjects

Thirteen teachers (5 fourth grade, 4 third grade, and 4 second grade) from a rural Texas elementary school[2] nominated

approximately half of the students (163 students in all) from each of their classes, who were not considered to be "good" students, to participate in a special "motivation program." In addition to "good" students, students in the school's special education program were also excluded from the study. One-hundred and eighteen of the nominated students were randomly selected and each student randomly assigned to one of eight groups, with the restriction that, as nearly as possible, equal number of subjects from each class were assigned to each of the eight groups. One student was lost from the study because she left the school district. Nine students were excluded from statistical analyses because of missing data due to absences.

Procedure

A 2 X 2 X 2 randomized factorial design was employed with (a) presence versus absence of teacher expectancy instructions, (b) presence versus absence of student expectancy instructions, and (c) presence versus absence of positive performance feedback as the major factors. There were 15 subjects for five of the treatment groups and 14 subjects for the remaining three treatment groups.

In a meeting two weeks before pretreatment measures were administered, teachers were asked to each nominate about 15 of their "poorer," but non-special education students for participation in a program designed to increase academic motivation by providing the students with positive performance feedback and some enjoyable educational experiences. At this time, the teachers were

also asked to list their nominated students' most recent academic grades and to rate their nominated students' "academic potential" on a five point scale (1, superior; 2 and 3, average; 4 and 5, inferior). One week after the teacher's meeting, nominated students were selected, assigned at random to groups, and the teachers were given a list of students who were to receive special "feedback" which the teachers were told should motivate the students to perform better academically. The "feedback" students listed on the teacher's note were the positive teacher expectancy instruction subjects who may or may not have, in fact, received special feedback within the experimental sessions. Teachers were told that the other (no teacher expectancy instructions) students selected to participate in the "motivation program" would go to weekly meetings, but would not receive any special "feedback."

The week following the selection of subjects, experimental students began their participation in eleven sessions of approximately one-half hour each, which occured outside their usual classrooms. At the first two and the last two sessions (pre-treatment and post-treatment) the students were given the arithmetic and spelling subtests of the Wide Range Achievement Test (WRAT) at one session and the Alpha Test of the Otis Quick-Scoring Mental Ability Tests (Otis) at another session. The students were tested by grade level and were separated at each grade level into positive student expectancy instruction and no student expectancy instruction groups for pre-treatment testing. Just before the first pre-treatment testing session, the positive expectancy instruction students were told:

You students have been brought here for a special reason. We think that you all have the stuff it takes to do some mighty fine school work, so we're going to meet each week at this time for the next 11 weeks and do some things that will probably show your teachers what you can do. We think you're going to do some pretty good school work with the help of the meetings we're going to have. In the meetings, we'll watch some movies and may do a couple of other things. Some of the other students will not be doing what you're going to do so please don't talk about what we do here--OK?

The no student expectancy instruction subjects were told:

We're going to be meeting together for the next 11 weeks. In the meetings we'll watch some movies and may do a couple of other things. Some of the other students will not be doing what you're going to do so please don't talk about what we do here--OK?

The non-testing, experimental sessions occured once per week beginning March 2, and ending on April 13, (7 sessions). At each experimental session the students were shown (in groups of approximately 42 students, by grade level) a neutral, entertaining film (e.g., about the Grand Canyon, Spanky and Our Gang, etc.) which lasted approximately 20 to 30 minutes. During the second through the seventh experimental sessions, the positive feedback students were randomly split into two groups. Each positive feedback student was called to the back of the room every other week (three times in all), one at a time during the film and were "congradulated" by the experimenter supposedly because they had

done "a good job on the tests they had taken" and because they "were doing well in their regular classes."

On the day of the fifth experimental session, teachers were given a short note to tell them how the "motivation program" was going and to reiterate the positive teacher expectancy instruction: "...the feedback students...are responding well to our short talks. You should be seeing some increased effort from those students...." The positive teacher expectancy instruction subjects were listed at the bottom of the note, labeled as: "'Feedback' students from your class." After the seventh experimental session post-treatment tests were administered again. Finally, the teachers again rated their experimental students' academic potential and listed their experimental students' most recent academic grades (6 week period grades were given at the end of the last post-treatment testing week).

Results and Discussion

Analyses were done on 108 subjects with 12 to 15 subjects per treatment group. A type two (Overall & Spiegel, 1969) least squares analysis of variance was computed[3] for each of the following dependent variables: teacher ratings of student academic potential; student grade totals (6 week period class grades converted to numerical scores); Otis raw scores; WRAT spelling scores; and WRAT arithmetic scores. For each analysis all five dependent variable pre-treatment scores were used as covariates in order to adjust for any pre-treatment differences which may have existed among the treatment groups. In addition, each analysis included

the 13 teachers, and sex of subject as additional independent variables. Only 2 way interactions were included in the analysis (the teacher X teacher expectancy instruction interaction was excluded because one of the cells had a 0 frequency). In summary, each of the 5 analyses was a 2 (Teacher expectancy instructions) X 2 (student expectancy instructions) X 2 (feedback) X 2 (sex) X 13 (teacher) least squares analysis of variance with academic potential ratings, grade total, Otis, WRAT spelling, and WRAT arithmetic as pre-treatment covariates.

There were significant individual teacher effects on academic potential, $F(12/59)=2.499$, $p<.025$; grade total, $F(12/59)=2.013$, $p<.05$; and Otis, $F(12/59)=1.933$, $p<.05$. There was a significant feedback effect on the Otis, $F(1/59)=5.575$, $p<.025$. The Otis adjusted means for the feedback and no feedback groups are presented in Table 1. From inspection of Table 1, the feedback group

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Insert Table 1 about here

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performed significantly better on the post-treatment Otis than did the no feedback group. There was a significant interaction on grade total between teacher expectancy instructions and feedback, $F(1/59)=4.009$, $p<.05$. The grade total adjusted means for this interaction are presented in Table 2. A Scheffé test on all

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Insert Table 2 about here

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possible pairwise comparisons among the four adjusted means demonstrated that the no feedback group received higher post-treatment grade totals than did the feedback group ($p<.05$) under the positive teacher expectancy instructions condition only. No other significant differences were found by the Scheffé test. There were no significant teacher expectancy instructions or student expectancy instructions effects found.

The significant teacher effects found suggest that teachers differentially changed their subjective ratings of student academic potential, differentially changed the grades given to their students, and differentially affected their students' post-treatment Otis scores all independently of any of the controlled variables in the present study. Such a finding suggests that teachers do influence a number of academically related variables. It appears that something about this "motivation program" or correlated events caused teachers to behave differentially towards students in the present study. Unfortunately, the present study was not designed to investigate what those variables (other than teacher expectancy instructions) might be. However, such a consistent finding of teacher effects would suggest that the study of individual teacher differences in response to events other than teacher expectancy instructions could be productive. Perhaps the mere presence of a "special" project designed to increase student academic achievement broadly affected different teachers in different ways, some expecting all of their students in the program to do well. In fact, post-experimental discussions with the teachers suggested that a number of teachers did have strong beliefs

that the "motivation" program had been effective, whereas others did not appear to hold this belief.

The significant teacher expectancy instructions X feedback interaction found for the grade total variable was not predicted and is a difficult finding to explain. It may be that teacher expectancy instructions positively changed teacher behavior towards the teacher expectancy students as has been demonstrated in several studies cited in the introduction. This changed teacher behavior may have been less expected and thus more reinforcing for the no feedback than for the feedback students who because of positive feedback may have expected positive teacher behavior. This, in turn, may have increased the no feedback students' motivation and/or reinforcement effect more than for the feedback students. Crockenberg, 1970 and Means and Means, 1971 lend some support to this hypothesis in that moderately high positive expectancy improved performance more than very high expectancy did, assuming in the present study that positive teacher expectancy-no feedback students had moderate positive expectancies of academic achievement. According to this explanation, we would expect the no teacher expectancy instruction-feedback group to perform better than the teacher expectancy instruction-feedback and the no teacher expectancy instruction-no feedback groups, the latter two groups having supposedly overly high and overly low expectancies respectively. Inspection of Table 2 verifies this prediction. However, if the above hypothesis is true, then why were there no teacher expectancy instructions X feedback effects on the other

dependent variables? An understanding of the found interaction must await further research possibly involving the observation of student-teacher behavioral interaction under conditions involving student feedback and teacher expectancy instructions.

The finding of a feedback effect on the Otis supports one of the predictions of the present study, but the absence of a main feedback effect on the other dependent variables, limits the support of the hypothesized feedback-motivation effect. However, the presence of a feedback effect in the absence of teacher and student expectancy effects suggests that feedback may be relatively more potent than student and teacher expectancy effects manipulated by verbal instructions.

The absence of any student expectancy instructions effect does not confirm one of the major predictions of the present study. It is felt that the possibility of any effects due to student expectancy instructions were minimized in the present study because the student expectancy instructions consisted of about five sentences given once during the entire study. However, during six of the experimental sessions half of the students saw other students (feedback students) frequently given positive feedback and praise while they (the no feedback students) received none. A number of the non-feedback students asked the experimenter when they would get to talk to the experimenter. When these students were told they would receive no opportunity to do so, they appeared to be disappointed and some openly expressed opinions that they had not done well on the tests taken. It is felt that such

perceptions among the non-feedback students might have overridden any possible effects due to student expectancy instructions.

The absence of any main teacher expectancy instructions effect does not confirm one of the major predictions of the present study and is contrary to teacher expectancy effects found previously. There are a number of differences between the present and other studies which may account for the differences in results, such as different expectancy instructions, dependent variables, and time periods for the studies.

In conclusion, the major thrust of this paper suggests four major points for future studies. Arbitrarily given feedback may be a fairly potent variable affecting academic performance and therefore merits further study (further research on this variable is currently under way). Second, procedures used in experiments or in school may have a greater effect on teacher and student expectancies than verbal instructions. Third, the induction of moderately positive expectancies may be more effective in positively affecting academic performance than are very high or very low expectancies. And finally, individual teachers may differ considerably in their response to experimental manipulations within their classrooms.

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Footnotes

1. Requests for reprints should be addressed to George Persely, Division of Psychology, Bowling Green State University, Bowling Green, Ohio 43403.

2. The author wishes to express his gratitude to Dr. Bill Caldwell of the University of Texas Medical Branch; Kenneth C. Welsch, Superintendent of the Columbia - Brazoria Independent School District; Allan Neel, principal of West Columbia Elementary School; the teachers and aides of the West Columbia Elementary School, and Elsie Persely for their consultation and assistance in this research project.

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TABLE 1.

Otis Adjusted Means for Feedback and No Feedback Groups and Raw Score Unadjusted Post-Treatment Means in Parentheses.

	Student Feedback	No Student Feedback
Adjusted Mean	62.421	59.640
Unadjusted Mean	(62.642)	(59.618)
Number of Subjects	53	55

TABLE 2.

Grade Total Adjusted Means for Feedback and Teacher Expectancy Instructions Groups and Raw Score Unadjusted Post-Treatment Means in Parentheses.

	Student Feedback	No Student Feedback
Positive Teacher Expectancy Instructions	28.864* (29.160)	30.198* (31.185)
Number of Subjects	25	27
No Teacher Expectancy Instructions	29.684 (30.571)	29.176 (28.500)
Number of Subjects	28	28

* Means differ at $p<.05$ (Scheffé test).